1992 S.E.R.C. Bird Census

Richard J. Waynor Aug. 7, 1992 Methods:

From a 1988 aerial photograph a map was made showing the forests on the S.E.R.C. property. A 0.4 km squared grid was superimposed on the existing 1 ha grid system. All except 9 cells censused had > 50 percent forest. Selected cells were scouted and marked in the center with yellow flags before censusing. Data on vegetation characteristics were recorded at each site. This included percent forest cover, forest age, plant species diversity and density and amount of edge. See appendix A (data sheet) and appendix B (document file) for more complete detail on vegetation and other site variables. At each site two kinds of counts were used: 1) 10 minute standard or passive counts, meaning recording data by quietly watching and listening, followed by, 2) 10 minute playback counts during which the songs of woodthrush, red eyed vireo, white eyed vireo, ovenbird and hooded warbler were played. Each song was played for 45 seconds followed by an approximate one minute listening period

The recordings were played on a small Realistic 4 AA battery powered cassette/recorder along with a portable Realistic 4 C battery powered dual speaker/amplifier system. The playback was played at a constant volume

and the speakers rotated during play.

The recordings of the woodthrush and red eyed vireo were made in north-western Pa, the white eyed vireo somewhere in Md, and the ovenbird and hooded warbler were recorded at S.E.R.C.. All recording were made on a

Urer 4000 Reput Monitor tape recorder.

Durning both counts I focused on the 5 species recorded on the playback. All other species heard or seen were also recorded although not their exact numbers. At each site (except for the subset, I will discribe below) a 10 minute standard count was followed by a playback count. On the data sheets an open circle symbolized that a bird was detected in the first 0 to 5 minutes of the count. A half moon indicated detection between the 5 to 10 minute portion of the count. Finally, a solid circle indicates that the bird was detected durning the 10 to 20 minute portion of the count (the playback portion).

In situations where it was uncertain if there was a additional bird it was assumed that there was. There were 21 of these cases for woodthrush, 32 for red eyed vireo, 0 for white eyed vireo, 23 for ovenbird and 0 for hooded warbler. These are marked on the computer sheet by a small square in the upper

right hand corner of the box in spaces 14 to 47.

A total of 104 sites were censused. The first 23 censused were repeated on subsequent days using 10 minute playback counts only. In July after the 104 censuses were all completed, 18 of the 23 recounted sites were again censused twice; first with 20 minute counts, and secons with 10 minute playback counts on subsequent days. The total number of counts conducted was 163.

Discussion:

We have shown that over the entire season the playback counts do not considerally add to the number of birds detected. This can be seen in the species vs date graphs which do not show an increase between the 'T' (standard + playback counts) and 'P' (standard counts only) as the season progressed. We would expect to see an increase if normal bird activity dropped but could be enhanced with the playback. Likewise, after parametric 2 way analysis of variance stastical test the recensused sites did not show a difference in the playback only and standard only means both early and late in the census.

A census for ovenbirds should end before July 1 since it was found that their numbers significantly droped by mid July. Woodthrush seems to show some decline with the progressing season. The other species did not

seem to decline much.

The most common of the 5 species is the red eyed vireo. Next most common was woodthrush followed by ovenbird. White eyed vireo and hooded warbler occured almost equally (see table 1). It is not clear which is more common since they have different habitat requirements.

A test of standard 20 minute counts compared with 20 minute standard and playback counts should be conducted to test whether the additional individuals detected durning the playback was due to the tape or simply the additional listening time.

TABLE 1: Occurance Rate of Focal Species

Standard & Playback (20 minute counts)

TWOTH TREVI TWEVI TOVEN THOWA	OCCURANCE/PLOT  76/104 = 73.1 101/104= 97.1 19/104 = 18.3 56/104 = 53.9 19/104 = 18.3	MEAN Birds/Plot 1.53 2.49 0.22 1.00 0.19	SUM Total Birds Re 159 259 23 104 20	Maxium #/Census ecorded 5 5 2 2
	Standard Only (	10 minute counts	not including p	playback)
PWOTH PREVI PWEVI POVEN PHOWA	66/104 = 63.5 $98/104 = 94.2$ $11/104 = 10.6$ $47/104 = 45.2$ $16/104 = 15.4$	1.18 2.00 0.14 0.70 0.16	123 208 14 73 17	5 5 2 4 2

#### TABLE 2: Occurance Rate of Additional Species

Additional Species Total Occurance/Plot (Playback and Standard)

KEWA	40/104 = 38.5	Percentage of plots with HOWA that also
ACFL	71/104 = 68.3	had KEWA present: $9/19 = 47.3$
NOPA	25/104 = 24.0	
SCTA	52/104 = 50.0	

#### TOTAL SPECIES LIST:

Total Species = 54 \* = occured once

WOTH	RBWP	CAWR	ENSP*	SCTA	YBCOO	INBU
REVI	DOWP	TUTI	OROR*	ACFL	YBCH	BRTH
WEVI	NOFL	BLJA	AMGO	CHSW	BARRED OWL*	RWBB
HOWA	HAWP*	RSHK	KEWA	SUTA*	WITURKEY*	EAPH
OVEN	AMCR	CACH	LOWT	NOMOBI	BRHECOW	CATBI
PIWP	NOCA	COGR	COYE	RUSITO	BLGAGNAT	PRARIE WA
BOBW	FESP	EUST*	AMRO	MODO	BARN OWL*	
TUVU*	PIWA*	MAWR	WOPE	NOPAWA	GB HERON	

See Appendix C for abbreviation meanings.



01JUL92

06JUL92

11JUL92

16JUL92

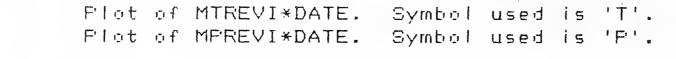
21JUL92

26JUN92

11JUN92

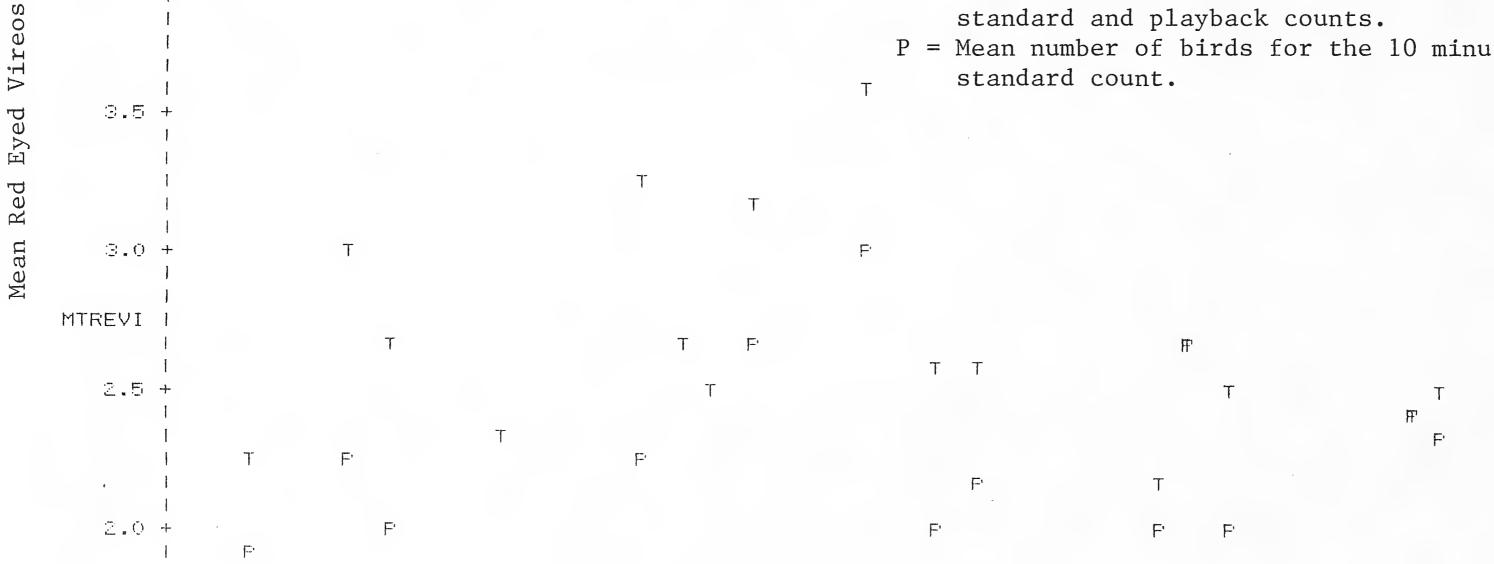
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21JUN92



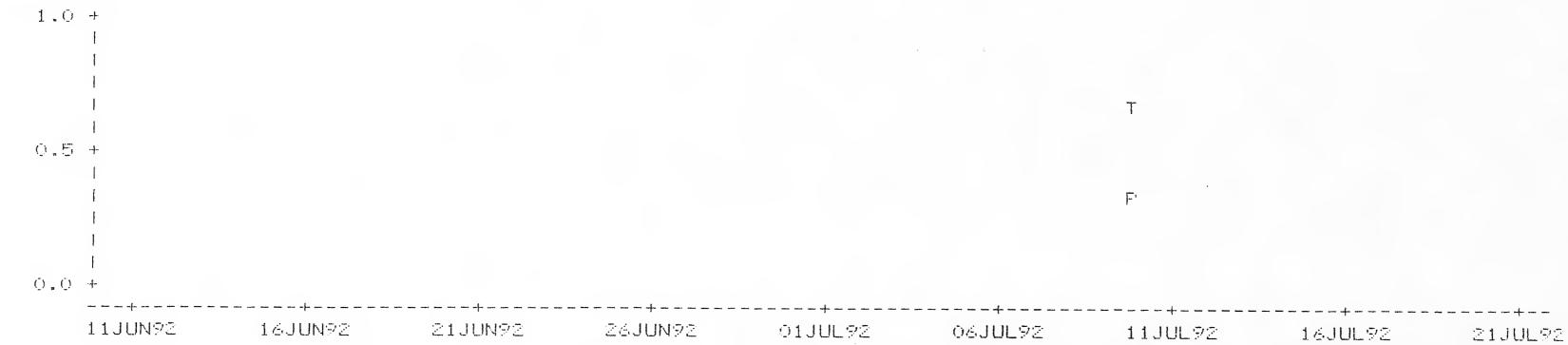


P = Mean number of birds for the 10 minute standard count.

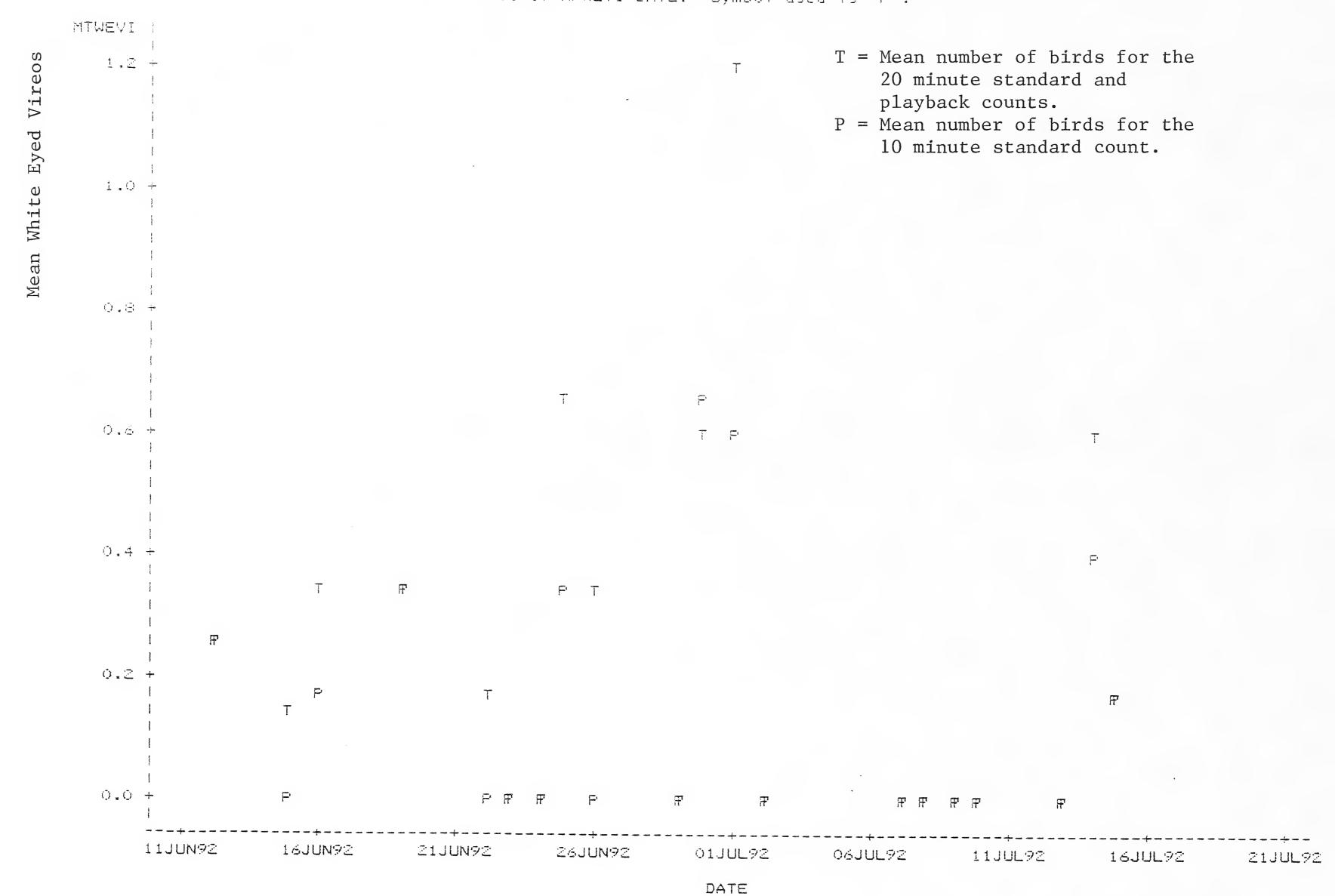


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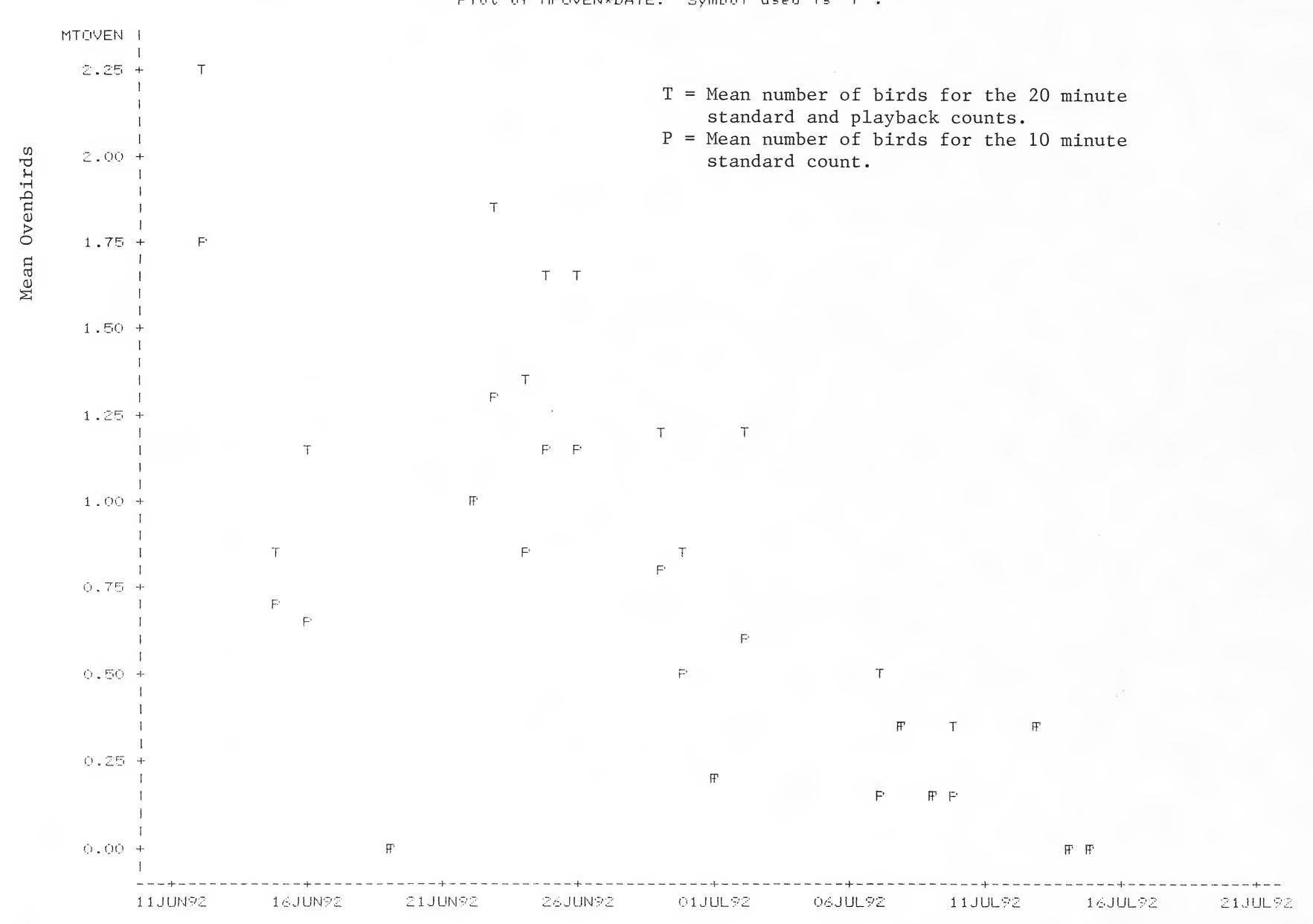




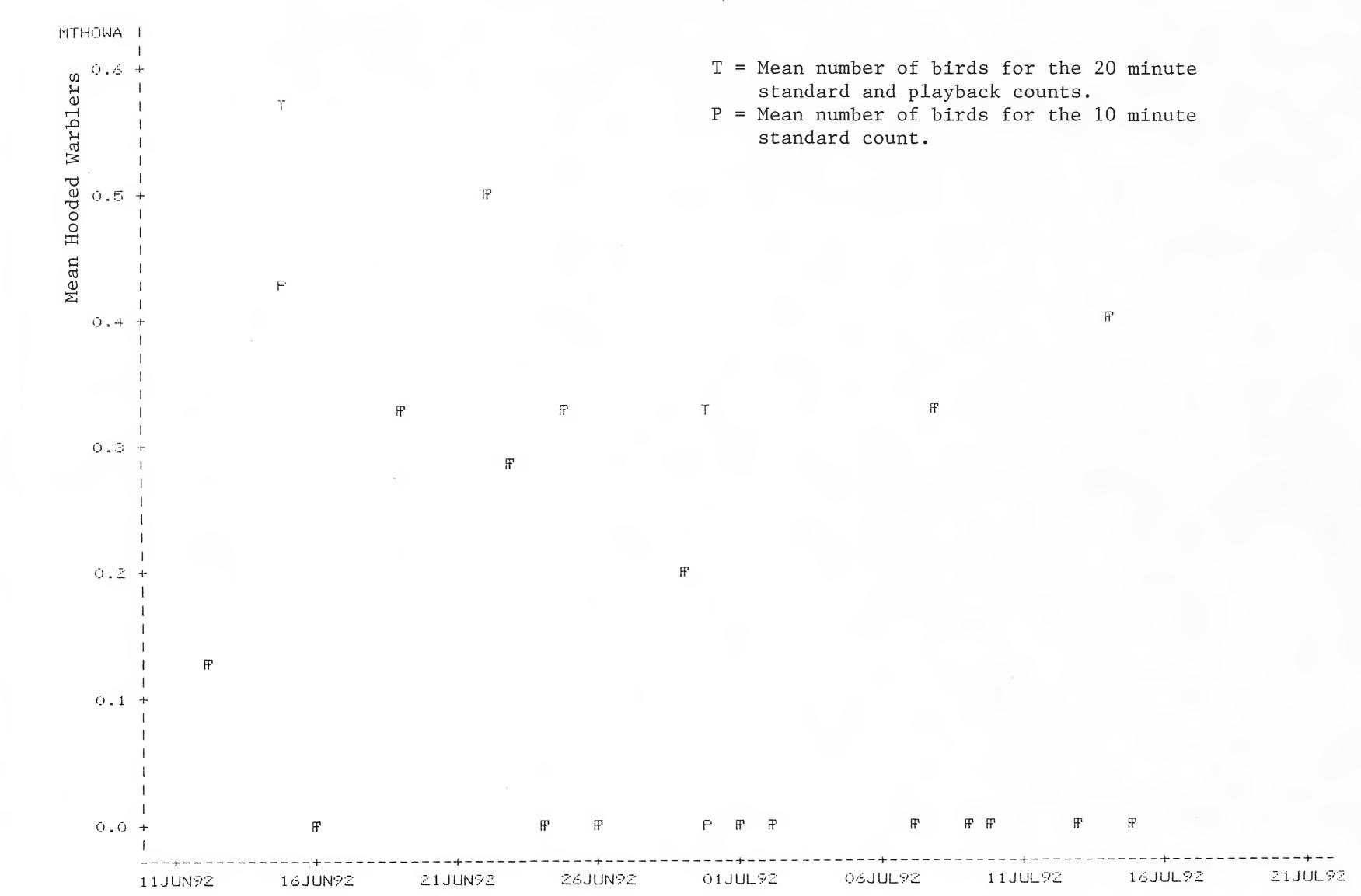
Plot of MTWEVI\*DATE. Symbol used is 'T'. Plot of MPWEVI\*DATE. Symbol used is 'P'.



Flot of MTOVEN\*DATE. Symbol used is 'T'. Plot of MPOVEN\*DATE. Symbol used is 'F'.



Plot of MTHOWA\*DATE. Symbol used is 'T'. Flot of MPHOWA\*DATE. Symbol used is 'P'.



DATE

HABITAT: Mature upland deciduous forest dominated by *Quercus, Fagus, Carya, Liriodendron*. Bordered on 3 sides by riparian forest, on one side by successional forest. PLOT AREA: 15 ha

		N	umber of	territori	es		
Species	1983	1987	1989	1990	1991	1992	
Barred Owl	the season delicions where the season seasons are	+*		+		+	
Red-shouldered Hawk	+	·	nr,**	nr	+	•	
American Woodcock			•••,	+	•		
Common Flicker	1		+	+	0.75	0.5	
Red-bell. Woodpecker	3.75	2.25	2.25	2	2.25	3	
Downy Woodpecker	1.25	1.25	1.5	1	1.75	2	
Hairy Woodpecker	0.75	0.25	0.5	0.5	+	-	
Pileated Woodpecker	0.5		0.5	0.25	0.5	0.25	
Yellow-billed Cuckoo	+	1.5	+	+			
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3	
Acadian Flycatcher	9.75	9	10.75		9.75	12	
Great Cr. Flycatcher	1	+	0.5	+	0.25		
Common Crow			nr	nr	nr	+	
Blue Jay	+		1.25	0.5	+	0.25	
White-br. Nuthatch	1	1	1	0.75	0.25	1	
Carolina Wren			2	0.5	2	1.5	
Blue-gray Gnatcatche	r +				_		
Wood Thrush	8	10	8.75	4.5	5.25	6	
American Robin		+	+			+	
Gray Catbird	+	+					
Tufted Titmouse	2.5	2.5	2.5	1.25	1	1.5	
Carolina Chickadee	3	1.5	1 .	0.75	1	1	
Red-eyed Vireo	14.75	15	10.5	7.5	4.75	7.75	
Yellow-thr. Vireo	+						
Kentucky Warbler	2		+	+	1	0.5	
Hooded Warbler	1	nr	+	nr			
Ovenbird	12.25	10.75	10.5	6.75	5.5	6.5	
Northern Parula	0.75	1	1	nr	nr	0.5	
Scarlet Tanager	3.25	2	1.25	+	1	0.5	
Northern Cardinal	2.75	2.25	2	1.5	0.5	0.25	
Rufous-sided Towhee	nr			+			
Brheaded Cowbird	nr	+	+	+	+	+	
Census visits	6	11	8	5 ,	5	7	
Census hours	15.9	28.0	17.2	8.25	10.8	11.1	
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0	
Territories/100 ac	185.0	162.2	157.8	91.5	98.5	121.2	
	•						

<sup>\* -</sup> detected  $\leq$  2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

HABITAT: Mature upland deciduous forest dominated by *Quercus, Fagus, Carya, Liriodendron*. Bordered on 3 sides by riparian forest, on one side by successional forest. PLOT AREA: 15 ha

		Nu	umber of	territorie	98		
Species	1983	1987	1989	1990	1991	1992	
Barred Owl		+*		+		+	
Red-shouldered Hawk	+	т	nr,**	nr	+	т	
American Woodcock	•		111,	+	Т		
Common Flicker	1		+	+	0.75	0.5	
Red-bell. Woodpecker	3.75	2.25	2.25	2	2.25	3	
Downy Woodpecker	1.25	1.25	1.5	1	1.75	2	
Hairy Woodpecker	0.75	0.25	0.5	0.5	+	_	
Pileated Woodpecker	0.75	0.23	0.5	0.25	0.5	0.25	
Yellow-billed Cuckoo	+	1.5	+	+	0.5	0.23	
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3	
Acadian Flycatcher	9.75	9	10.75		9.75	12	
Great Cr. Flycatcher	1	+	0.5	+	0.25	1 2	
Common Crow	'	Т	nr	nr	nr	+	
Blue Jay	+		1.25	0.5	+	0.25	
White-br. Nuthatch	1	1	1.23	0.75	0.25	1	
Carolina Wren	'	1	2	0.73	2	1.5	
Blue-gray Gnatcatche	r +		<b>~</b>	0.5	2	1.5	
Wood Thrush	8	10	8.75	4.5	5.25	6	
American Robin	O	+	+	4.5	3.23	+	
Gray Catbird	+	+	Т			Т	
Tufted Titmouse	2.5	2.5	2.5	1.25	1	1.5	
Carolina Chickadee	3	1.5	1	0.75	1	1.5	
Red-eyed Vireo	14.75	1.5	10.5	7.5	4.75	7.75	
Yellow-thr. Vireo		13	10.5	1	4.73	1.13	
Kentucky Warbler	+ 2				4	0.5	
Hooded Warbler	1	nr	+	+ nr	ı	0.5	
Ovenbird	12.25	10.75	+ 10.5	nr 6.75	5.5	6.5	
Northern Parula	0.75	1	1		nr	0.5	
Scarlet Tanager	3.25	2	1.25	nr	111	0.5	
Northern Cardinal	2.75	2.25	2	+ 1 5	0.5		
Rufous-sided Towhee		2.23	2	1.5	0.5	0.25	
Brheaded Cowbird	nr			+			
DIHEAUEU COWDIIU	nr	+	+	+	+	+	
Census visits	6	11	8	5	5	7	-
Census hours	15.9	28.0	17.2	8.25	10.8	11.1	
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0	
Territories/100 ac	185.0	162.2	157.8	91.5	98.5	121.2	
	•						

<sup>\* -</sup> detected ≤ 2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

HABITAT: Mature upland deciduous forest dominated by *Quercus, Fagus, Carya, Liriodendron*. Bordered on 3 sides by riparian forest, on one side by successional forest. PLOT AREA: 15 ha

	Number of territories							
Species	1983	1987	1989	1990	1991	1992		
Barred Owl		+*		+		+		
Red-shouldered Hawk	+		nr,**	nr	+	•		
American Woodcock			- ''',	+	•			
Common Flicker	1		+	+	0.75	0.5		
Red-bell. Woodpecker	3.75	2.25	2.25	2	2.25	3		
Downy Woodpecker	1.25	1.25	1.5	1	1.75	2		
Hairy Woodpecker	0.75	0.25	0.5	0.5	+	_		
Pileated Woodpecker	0.5	• • • •	0.5	0.25	0.5	0.25		
Yellow-billed Cuckoo	+	1.5	+	+		0.20		
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3		
Acadian Flycatcher	9.75	9	10.75		9.75	12		
Great Cr. Flycatcher	1	+	0.5	+	0.25	-		
Common Crow		·	nr	nr	nr	+		
Blue Jay	+		1.25	0.5	+	0.25		
White-br. Nuthatch	1	1	1	0.75	0.25	1		
Carolina Wren	•	•	2	0.5	2	1.5		
Blue-gray Gnatcatche	r +		_		-			
Wood Thrush	8	10	8.75	4.5	5.25	6		
American Robin		+	+			+		
Gray Catbird	+	+						
Tufted Titmouse	2.5	2.5	2.5	1.25	1	1.5		
Carolina Chickadee	3	1.5	1.	0.75	1	1		
Red-eyed Vireo	14.75	15	10.5	7.5	4.75	7.75		
Yellow-thr. Vireo	+							
Kentucky Warbler	2		+	+	1	0.5		
Hooded Warbler	1	nr	+	nr				
Ovenbird	12.25	10.75	10.5	6.75	5.5	6.5		
Northern Parula	0.75	1	1	nr	nr	0.5		
Scarlet Tanager	3.25	2	1.25	+	1	0.5		
Northern Cardinal	2.75	2.25	2	1.5	0.5	0.25		
Rufous-sided Towhee	nr			+				
Brheaded Cowbird	nr	+	+	.+	+	+		
		.4		·				
Census visits	6	11	8	5 ,	5	7		
Census hours	15.9	28.0	17.2	8.25	10.8	11.1		
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0		
Territories/100 ac	185.0	162.2	157.8	91.5	98.5	121.2		

<sup>\* -</sup> detected ≤ 2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

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	Number of territories								
Species	1983	1987	1989	1990	1991	1992			
Barred Owl		*							
Red-shouldered Hawk		+*		+		+			
American Woodcock	+		nr,**	nr	+				
Common Flicker	4			+	0.75	0.5			
Red-bell. Woodpecker	275	0.05	+	+	0.75	0.5			
Downy Woodpecker		2.25	2.25	2	2.25	3			
Hairy Woodpecker	1.25	1.25	1.5	1	1.75	2			
	0.75	0.25	0.5	0.5	+				
Pileated Woodpecker	0.5	4 =	0.5	0.25	0.5	0.25			
Yellow-billed Cuckoo	+	1.5	+	+					
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3			
Acadian Flycatcher	9.75	9	10.75	6.25	9.75	12			
Great Cr. Flycatcher	1	+	0.5	+	0.25				
Common Crow			nr	nr	nr	+			
Blue Jay	+		1.25	0.5	+	0.25			
White-br. Nuthatch	1	1	1	0.75	0.25	1			
Carolina Wren			2	0.5	2	1.5			
Blue-gray Gnatcatche	r +								
Wood Thrush	8	10	8.75	4.5	5.25	6			
American Robin		+	+			+			
Gray Catbird	+	+							
Tufted Titmouse	2.5	2.5	2.5	1.25	1	1.5			
Carolina Chickadee	3	1.5	1.	0.75	1	1			
Red-eyed Vireo	14.75	15	10.5	7.5	4.75	7.75			
Yellow-thr. Vireo	+								
Kentucky Warbler	2		+	+	1	0.5			
Hooded Warbler	1	nr	+	nr					
Ovenbird	12.25	10.75	10.5	6.75	5.5	6.5			
Northern Parula	0.75	1	1	nr	nr	0.5			
Scarlet Tanager	3.25	2	1.25	+	1	0.5			
Northern Cardinal	2.75	2.25	2	1.5	0.5	0.25			
Rufous-sided Towhee	nr	2.20	_	+	0.5	0.23			
Brheaded Cowbird	nr	+	+		_	_			
		•		+	+	+			
Census visits	6	11	8	5 ,	5	7			
Census hours	15.9	28.0	17.2	8.25	10.8	11.1			
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0			
Territories/100 ac	185.0	162.2	157.8	91.5	98.5	121.2			

<sup>\* -</sup> detected  $\leq$  2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

HABITAT: Mature upland deciduous forest dominated by *Quercus, Fagus, Carya, Liriodendron*. Bordered on 3 sides by riparian forest, on one side by successional forest. PLOT AREA: 15 ha

		Nu	umber of	territorie	es		
Species	1983	1987	1989	1990	1991	1992	
Barred Owl		+*		+		+	-
Red-shouldered Hawk	+		nṛ**	nr	+		
American Woodcock			,	+			
Common Flicker	1		+	+	0.75	0.5	
Red-bell. Woodpecker	3.75	2.25	2.25	2	2.25	3	
Downy Woodpecker	1.25	1.25	1.5	1	1.75	2	
Hairy Woodpecker	0.75	0.25	0.5	0.5	+		
Pileated Woodpecker	0.5		0.5	0.25	0.5	0.25	
Yellow-billed Cuckoo	+	1.5	+	+			
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3	
Acadian Flycatcher	9.75	9	10.75	6.25	9.75	12	
Great Cr. Flycatcher	1	+	0.5	+	0.25		
Common Crow			nr	nr	nr	+	
Blue Jay	+		1.25	0.5	+	0.25	
White-br. Nuthatch	1	1	1	0.75	0.25	1	
Carolina Wren			2	0.5	2	1.5	
Blue-gray Gnatcatche	r +						
Wood Thrush	8	10	8.75	4.5	5.25	6	
American Robin		+	+			+	
Gray Catbird	+	+					
Tufted Titmouse	2.5	2.5	2.5	1.25	1	1.5	
Carolina Chickadee	3	1.5	1 .	0.75	1	1	
Red-eyed Vireo	14.75	15	10.5	7.5	4.75	7.75	
Yellow-thr. Vireo	+						
Kentucky Warbler	2		+	+	1	0.5	
Hooded Warbler	1	nr	+	nr			
Ovenbird	12.25	10.75	10.5	6.75	5.5	6.5	
Northern Parula	0.75	1	1	nr	nr	0.5	
Scarlet Tanager	3.25	2	1.25	+	1	0.5	
Northern Cardinal	2.75	2.25	2	1.5	0.5	0.25	
Rufous-sided Towhee	nr			+			
Brheaded Cowbird	nr	+	+	, <del>+</del>	+	+	
Census visits	6	11	8	5 ,	5	7	
Census hours	15.9	28.0	17.2	8.25	10.8	11.1	
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0	
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	1992	991	1990	1989	1987	1983	Species	
	+		+	-	+*		Barred Owl	
		+	nr	nr**		+	Red-shouldered Hawk	
			+	,			American Woodcock	
	0.5	.75 (	+	+		1	Common Flicker	
	3	.25	2	2.25	2.25	3.75	Red-bell. Woodpecker	
	2	.75	1	1.5	1.25	1.25	Downy Woodpecker	
		+	0.5	0.5	0.25	0.75	Hairy Woodpecker	
	0.25		0.25	0.5		0.5	Pileated Woodpecker	
			+	+	1.5	+	Yellow-billed Cuckoo	
	3	.5	2.25	4.75	4	4	Eastern Wood Pewee	
	12		6.25	10.75	9	9.75	Acadian Flycatcher	
		.25	+	0.5	+	1	Great Cr. Flycatcher	
	+		nr	nr			Common Crow	
	0.25		0.5	1.25		+	Blue Jay	
	1	.25	0.75	1	1	1	White-br. Nuthatch	
	1.5	)	0.5	2	•	•	Carolina Wren	
	1.5	•	0.0	_		+	Blue-gray Gnatcatcher	
	6	25	4 5	8 75	10	8	Wood Thrush	
			7.5			Ū		
	т			•		+		
	1 5	1	1 25	2 5			•	
	1	'						
	7 75	75 7						
	7.75	75 7		10.5	1 3			
	0.5		_	<b>.</b>				
	0.5	C			nr	1		
•	6.5	5 6				12 25		
				1	1			
				1 25	2			
				_				
	0.23	5 0		_	L . L J			
					<b>.</b>			
	+		+	+	<del>+</del>	111		
	7	5	5 ,	8	11	6	Census visits	
	11.1	0.8 1	3.25	17.2	28.0	15.9	Census hours	
	48.0	0.0 4	36.25	62.5	64.25	73.25	Territories on plot:	
	121.2	.5 1	91.5	157.8	162.2	185.0	Territories/100 ac	
	11.1 48.0	5 6 7 0 5 0 5 0 5 0 6 1 0 0 4	+ nr 5.75 nr + .5 + + 5 3.25	+ 2.5 1 10.5 + + 10.5 1 1.25 2 + 8 17.2 62.5	+ + 2.5 1.5 1.5 15 nr 10.75 1 2 2.25 +	+ 2.5 3 14.75 + 2 1 12.25 0.75 3.25 2.75 nr nr 15.9 73.25	American Robin Gray Catbird Tufted Titmouse Carolina Chickadee Red-eyed Vireo Yellow-thr. Vireo Kentucky Warbler Hooded Warbler Ovenbird Northern Parula Scarlet Tanager Northern Cardinal Rufous-sided Towhee Brheaded Cowbird  Census visits Census hours Territories on plot:	

<sup>\* -</sup> detected  $\leq$  2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

HABITAT: Mature upland deciduous forest dominated by *Quercus, Fagus, Carya, Liriodendron*. Bordered on 3 sides by riparian forest, on one side by successional forest. PLOT AREA: 15 ha

		N					
Species	1983	1987	1989	1990	1991	1992	
Barred Owl		+*		+		+	
Red-shouldered Hawk	+		nr**	nr	+		
American Woodcock			_	+			
Common Flicker	1		+	+	0.75	0.5	
Red-bell. Woodpecker	3.75	2.25	2.25	2	2.25	3	
Downy Woodpecker	1.25	1.25	1.5	1	1.75	2	
Hairy Woodpecker	0.75	0.25	0.5	0.5	+		
Pileated Woodpecker	0.5		0.5	0.25	0.5	0.25	
Yellow-billed Cuckoo	+	1.5	+	+			
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3	
Acadian Flycatcher	9.75	9	10.75	6.25	9.75	12	
Great Cr. Flycatcher	1	+	0.5	+	0.25	_	
Common Crow		-	nr	nr	nr	+	
Blue Jay	+		1.25	0.5	+	0.25	
White-br. Nuthatch	1	1	1	0.75	0.25	1	
Carolina Wren		•	2	0.5	2	1.5	
Blue-gray Gnatcatche	r +		<b>-</b> -	0.0	<u></u>	1.0	
Wood Thrush	8	10	8.75	4.5	5.25	6	
American Robin	Ü	+	+	4.0	0.20	+	
Gray Catbird	+	+				T	
Tufted Titmouse	2.5	2.5	2.5	1.25	1	1.5	
Carolina Chickadee	3	1.5	1	0.75	1	1	
Red-eyed Vireo	14.75	1.5	10.5	7.5	4.75	7.75	
Yellow-thr. Vireo	+	1 3	10,0	7.5	4.73	1.13	
Kentucky Warbler	2		1		1	0.5	
Hooded Warbler	1	nr	+	+ nr		0.5	
Ovenbird	12.25	10.75	10.5	6.75	5.5	6.5	
Northern Parula	0.75	10.75	10.5				
Scarlet Tanager	3.25	2	1.25	nr	nr 1	0.5	
Northern Cardinal	2.75	2.25	2	+ 1 5	0.5	0.5	
Rufous-sided Towhee		2.23	<b>~</b>	1.5	0.5	0.25	
Brheaded Cowbird	nr			+			
	nr	+	+	+	+	+	
Census visits	6	11	8	5 ,	5	7	 
Census hours	15.9	28.0	17.2	8.25	10.8	11.1	
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0	
Territories/100 ac	185.0	162.2	157.8	91.5	98.5	121.2	

<sup>\* -</sup> detected  $\leq$  2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

HABITAT: Mature upland deciduous forest dominated by *Quercus, Fagus, Carya, Liriodendron*. Bordered on 3 sides by riparian forest, on one side by successional forest. PLOT AREA: 15 ha

		N					
Species	1983	1987	1989	1990	1991	1992	
Barred Owl		+*		+		+	
Red-shouldered Hawk	+	•	nr,**	nr	+	<b>T</b>	
American Woodcock			•••,	+	•		
Common Flicker	1		+	+	0.75	0.5	
Red-bell. Woodpecker	3.75	2.25	2.25	2	2.25	3	
Downy Woodpecker	1.25	1.25	1.5	1	1.75	2	
Hairy Woodpecker	0.75	0.25	0.5	0.5	+	_	
Pileated Woodpecker	0.5	0.20	0.5	0.25	0.5	0.25	
Yellow-billed Cuckoo	+	1.5	+	+	0.5	0.23	
Eastern Wood Pewee	4	4	4.75	2.25	1.5	3	
Acadian Flycatcher	9.75	9	10.75	6.25	9.75	12	
Great Cr. Flycatcher	1	+	0.5			1 4	
Common Crow	•	т		+ pr	0.25		
Blue Jay	1		nr 1 25	nr O 5	nr	+	
White-br. Nuthatch	+	4	1.25	0.5	+	0.25	
Carolina Wren	ı		2	0.75	0.25	1	
Blue-gray Gnatcatche	P .		2	0.5	2	1.5	
Wood Thrush	r + 8	1.0	0.75	4 5	<i></i>	0	
American Robin	0	10	8.75	4.5	5.25	6	
Gray Catbird		+	+			+	
Tufted Titmouse	+	+	0.5	1 05		4 =	
	2.5	2.5	2.5	1.25	1	1.5	
Carolina Chickadee	3	1.5	1 .	0.75	1	1	
Red-eyed Vireo	14.75	15	10.5	7.5	4.75	7.75	
Yellow-thr. Vireo	+		•				
Kentucky Warbler	2		+	+	1	0.5	
Hooded Warbler	1	nr	+	nr			
Ovenbird	12.25	10.75	10.5	6.75	5.5	6.5	
Northern Parula	0.75	1	1	nr	nr	0.5	
Scarlet Tanager	3.25	2	1.25	+	1	0.5	
Northern Cardinal	2.75	2.25	2	1.5	0.5	0.25	
Rufous-sided Towhee	nr			+			
Brheaded Cowbird	nr	+	+	.+	÷	+	
Census visits	6	11	8	5 ,	5	7	
Census hours	15.9	28.0	17.2	8.25	10.8	11.1	
Territories on plot:	73.25	64.25	62.5	36.25	39.0	48.0	
Territories/100 ac	185.0	162.2	157.8	91.5	98.5	121.2	

<sup>\* -</sup> detected  $\leq$  2 times and/or < 20% of territory within plot; \*\* - detected within 100m of plot

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	, <u>TERRIT</u>	ORIES	EST. PRS/100 ACRES		
	1991	1992	199119	92	
Barred Owl		+		ca.1	
Red-shouldered Hawk	+		+		
Common Flicker	0.75	0.5	1.9	1.2	
Red-bellied Woodpecker	2.25	3	5.6	7.5	
Downy Woodpecker	1.75	2	4.4	5.0	
Hairy Woodpecker	+		+		
Pileated Woodpecker	0.5	0.25	1.2	0.6	
Yellow-billed Cuckoo	+		+		
Eastern Wood Pewee	1.5	3	3.8	7.5	
Acadian Flycatcher	9.75	12	24.4	30.0	
Great Crested Flycatcher	0.25		0.6		
Common Crow	nr	+		+	
Blue Jay	+	0.25	+	0.6	
White-breasted Nuthatch	0.25	1	0.6	2.5	
Carolina Wren	2	1.5	5.0	3.8	
Wood Thrush	5.25	6	13.1	15.0	
American Robin		+		+	
Tufted Titmouse	1	1.5	2.5	3.8	
Carolina Chickadee	1	1	2.5	2.5	
Red-eyed Vireo	4.75	7.75	11.9	19.4	
Kentucky Warbler	1.0	0.5	2.5	2.2	
Ovenbird	5.5	6.5	13.8	16.2	
Northern Parula Warbler	nr	0.5		1.2	
Scarlet Tanager	1	0.5	2.5	1.2	
Northern Cardinal	0.5	0.25	1.2	0.6	
Brown-headed Cowbird	+	+	+	+	
Territories on plot:	39.0	48.0			
Est. territories/100 acres	3		97.5	120.0	

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRITORIES		EST. PRS/100 /	ACRES
	1991	1992	199119	
Barred Owl		+		 ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+		+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres			97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES			EST. PRS/100 A	CRES
	1991	1992	1991 199	
Barred Owl		+		 ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+		+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres	· · · · · · · · · · · · · · · · · · ·		97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRITORIES		EST. PRS/100 A	CRES
	1991	1992	1991 199	
Barred Owl		+		 ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+	<u>.</u>	+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres			97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRITORIES		EST. PRS/100 ACRES	
	1991	1992	1991 19	
Barred Owl		+		 ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+	1	+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr .	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres			97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRITORIES		EST. PRS/100 ACRES		
	1991	1992	199119		
Barred Owl		+		ca.1	
Red-shouldered Hawk	+		+		
Common Flicker	0.75	0.5	1.9	1.2	
Red-bellied Woodpecker	2.25	3	5.6	7.5	
Downy Woodpecker	1.75	2	4.4	5.0	
Hairy Woodpecker	+		+		
Pileated Woodpecker	0.5	0.25	1.2	0.6	
Yellow-billed Cuckoo	+		+		
Eastern Wood Pewee	1.5	3	3.8	7.5	
Acadian Flycatcher	9.75	12	24.4	30.0	
Great Crested Flycatcher	0.25		0.6		
Common Crow	nr	+		+	
Blue Jay	+	0.25	+	0.6	
White-breasted Nuthatch	0.25	1	0.6	2.5	
Carolina Wren	2	1.5	5.0	3.8	
Wood Thrush	5.25	6	13.1	15.0	
American Robin		+		+	
Tufted Titmouse	1	1.5	2.5	3.8	
Carolina Chickadee	1	1 .	2.5	2.5	
Red-eyed Vireo	4.75	7.75	11.9	19.4	
Kentucky Warbler	1.0	0.5	2.5	2.2	
Ovenbird	5.5	6.5	13.8	16.2	
Northern Parula Warbler	nr	0.5		1.2	
Scarlet Tanager	1	0.5	2.5	1.2	
Northern Cardinal	0.5	0.25	1.2	0.6	
Brown-headed Cowbird	+	+	+	+	
Territories on plot:	39.0	48.0			
Est. territories/100 acres	S		97.5	120.0	

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRIT	ORIES	EST. PRS/100 ACRES	
	1991	1992	1991 19	92
Barred Owl		+		ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+		+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres	3		97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES			EST. PRS/100	ACRES
	1991	1992	1991 19	92
Barred Owl		+		ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+		-+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres	3		97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRITORIES		EST. PRS/100	ACRES
	1991	1992	1991 19	
Barred Owl		+		ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+	***	+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres	3		97.5	120.0

DATES: 6-19 June 1992 VISITS: 7 HOURS: 11 hr 10 min

PLOT AREA: 15 ha (40 acre)

SPECIES	TERRITORIES		EST. PRS/100 A	ACRES
	1991	1992	1991 199	
Barred Owl		+		 ca.1
Red-shouldered Hawk	+		+	
Common Flicker	0.75	0.5	1.9	1.2
Red-bellied Woodpecker	2.25	3	5.6	7.5
Downy Woodpecker	1.75	2	4.4	5.0
Hairy Woodpecker	+		+	
Pileated Woodpecker	0.5	0.25	1.2	0.6
Yellow-billed Cuckoo	+	****	+	
Eastern Wood Pewee	1.5	3	3.8	7.5
Acadian Flycatcher	9.75	12	24.4	30.0
Great Crested Flycatcher	0.25		0.6	
Common Crow	nr	+		+
Blue Jay	+	0.25	+	0.6
White-breasted Nuthatch	0.25	1	0.6	2.5
Carolina Wren	2	1.5	5.0	3.8
Wood Thrush	5.25	6	13.1	15.0
American Robin		+		+
Tufted Titmouse	1	1.5	2.5	3.8
Carolina Chickadee	1	1	2.5	2.5
Red-eyed Vireo	4.75	7.75	11.9	19.4
Kentucky Warbler	1.0	0.5	2.5	2.2
Ovenbird	5.5	6.5	13.8	16.2
Northern Parula Warbler	nr	0.5		1.2
Scarlet Tanager	1	0.5	2.5	1.2
Northern Cardinal	0.5	0.25	1.2	0.6
Brown-headed Cowbird	+	+	+	+
Territories on plot:	39.0	48.0		
Est. territories/100 acres	,		97.5	120.0

